

NEW SPECIES OF GESNERIACEAE FROM THE NEOTROPICS

Hans Wiehler

Gesneriad Research Foundation, 1873 Oak Street, Sarasota, Florida 34236
U.S.A.

ABSTRACT

Twenty five new species in nine genera of Gesneriaceae are described. Most of these species are already in cultivation. Illustrations and more detailed descriptions will follow in the first volume of *Gesneriana*.

KEY WORDS: Gesneriaceae, *Achimenes*, *Codonanthe*, *Columnea*, *Dalbergaria*, *Drymonia*, *Paradrymonia*, *Pentadenia*, *Rhoogeton*, *Smithiantha*, México, Honduras, Costa Rica, Panamá, Colombia, Ecuador, Bolivia

Achimenes admirabilis* Wiehler, *sp. nov. TYPE: MEXICO. Oaxaca: District Juchitán, headwaters of Río Coatzacoalcos, E. of Santa María Chimalapa, above junction with Río Blanco, on large boulders by river. Rhizomes collected by *T.B. MacDougall*, no. 668, April 1966, cultivated at Cornell and GRF greenhouses, accession no. G-1024, 5 Jan. 1984, *Wiehler 8404* (HOLOTYPE: GES; Isotypes: BH,K,MEXU,NY,SEL,US, others to be distributed).

A *A. erecta* (Lamarck) H.P. Fuchs caulibus, petiolis pedicellisque trichomatibus glanduliferis, rhizomatibus sine trichomatibus glanduliferis, corollarum tubis longioribus, et corollarum faucibus sine sacculis recedit.

Slender, terrestrial herb with underground rhizomes with compacted, thick, succulent leaf scales, each rhizome ca. 1.5 by 0.3 cm, pale yellow, externally glabrous; stems erect or ascending, rarely branching, 10-25 cm tall, ca. 2.5 mm in diameter, reddish maroon, with elongated green lenticels, puberulous, with scattered longer capitate glandular trichomes, the internodes 0.5-3.0 cm long,

the leaves in whorls of 3 or 4, of equal size, the petioles 0.4-1.0 cm long, reddish maroon, puberulous, with scattered longer capitate glandular trichomes, the lamina lanceolate-elliptic, 2.5-3.5 by 1.0-1.5 cm, acuminate, serrate, cuneate, adaxially dark green, hirsute, abaxially lighter green, or spotted with maroon, or completely maroon, or merely the veins outlined with maroon, puberulous, the secondary pairs of veins 3-5. *Inflorescence* an axillary cyme of 1, 2, or more flowers (the second and any subsequent flower often changed into an asexual propagule consisting of a bright green, scaly rhizome), the peduncle present or absent, the prophylls 0.4-1.2 by 0.2-0.5 cm, the pedicels 1.2-2.0 cm, maroon, puberulous-hirsute, with capitate glandular trichomes, the hypanthium at anthesis ca. 2 mm long, the calyx lobes equal, triangular, ca. 5 by 2 mm, entire, yellow-green, hirsute, with capitate-glandular trichomes; *corolla* oblique in the calyx, tubular, with a minute spur, the tube ca. 2 cm long, bright orange-red, glabrous but with scattered capitate glandular trichomes, the limb large and oblique to the tube, the lobes spreading, unequal, the 2 upper lobes ca. 5 by 8 mm, the other 3 lobes ca. 7 by 8 mm, bright orange-red, glabrous, the throat yellow, with maroon spotting, the tube inside glabrous, but dorsally near the throat with short, capitate glandular trichomes; *stamens* 4, included, ca. 1.5 cm long, white, glabrous, the anthers coherent into a square, each anther 0.8 by 0.8 mm, the thecae parallel, dehiscing by longitudinal slits; *ovary* semi-inferior, turbinate, ca. 5 mm long, green, sericeous, the style ca. 1.4 cm long, white, pilose, the stigma bilobed; nectary a ring, ca. 1 mm high, yellow, glabrous. *Fruit* a dry, bivalved capsule, splitting loculicidally; *seed* fusiform, 0.4 by 0.2 mm, striate, light brown. Chromosome number $n=11$ (Wiehler 1977).

Codonanthe erubescens Wiehler, *sp. nov.* TYPE: ECUADOR. Morona-Santiago: 10 km S of Gualaquiza, on road from Limón to Zamora, on trees in cow pasture, 22 April 1988, *Wiehler & GRF Expedition 88152* (HOLOTYPE: GES; Isotypes: QCA,F,K,MO,NY,S,SEL,U,US).

Habitu plantae et aspectu floris *C. crassifoliae* (Focke) Morton similis, praecipue differt corollis longioribus, staminum filamentis pilosis, antherarum thecis corniculatis, et ovariorum stylis pilosis.

Epiphytic, perennial herb and creeper, the thin stems to 1 m long, 1-2 mm in diameter, young shoots green, older stems tan, clinging to tree trunks or branches, with adventitious roots on nodes and internodes, or pendent stems draping from branches, freely branching, the internodes 0.5 to 3 cm long, stems, leaves, pedicels, and calyx minutely pubescent but appearing glabrous; leaves opposite decussate, equal or subequal, the petiole ca. 0.6 cm long, green, the lamina ovate, rarely elliptic, acute, entire, rarely obscurely serrulate, decurrent, succulent, green or flushed with red, with 6-8 dotlike extrafloral nectaries abaxially, the secondary veins invisible. *Inflorescence* a

reduced, axillary cyme of several flowers (but appearing one at a time), the peduncle and prophylls absent, the pedicels 5-8 mm long, green; *calyx* conical, the lobes subequal, lanceolate, 3-5 by 1.0-1.5 mm, entire, green or suffused with red, with an extrafloral nectary in the sinus between adjacent lobes; *corolla* oblique in the calyx, infundibular, 3.0-3.5 cm long, cream-white, in full sun flushed with pink, puberulous, constricted above the long, curved spur, then abruptly expanding, the diameter above midpoint and below the spreading limb 7 mm, the lobes subequal, 5 by 5 mm, rounded, entire, the inside of the tube puberulous; *stamens* 4, included, the filaments 2.1 cm long, adnate to the base of the corolla tube for 9 mm, white, pubescent, pilose, and with capitate glandular trichomes, the anthers syngenesous in pairs, white, 1.0 by 1.6 mm, the thecae dehiscent by a central pore adorned with short, triangular horns; *ovary* superior, turbinate, 4 mm long, green, pubescent, the 1.3 cm long, white, pilose, the stigma stomatophytic; *nectary* a double connate dorsal gland, white, pubescent. *Fruit* an ovoid, slightly pointed, shiny, red, pubescent berry, 1.2 cm long; *seed* elliptic, 2 mm long, reddish, striate, enveloped by a fleshy funicle 3.2 mm long.

***Columnea filipendula* Wiehler, sp. nov.** TYPE: HONDURAS. foggy cloud forest S of Copán, altitude 1450 m, live cuttings collected in June 1981 by *Claire Herzog s.n.*, cultivated at Selby Gardens and the GRF under accession no. G-3063; type material prepared 6 May 1987, *Wiehler 87103* (HOLOTYPE: GES; Isotypes: EAP,F,K,MO,NY,SEL,US).

Differt a congeneris omnibus longitudine pedicelli pendentis tenuis.

Epiphytic, perennial herb, the *stems* erect, ascending, spreading or descending, to 50 cm long, to 8 mm in diameter, young shoots green, mature stems tan, sericeous, the internodes 2.5 to 5.0 cm long; *leaves* ternate, less frequently opposite decussate, equal or subequal, the petiole 1 cm long, sericeous, the lamina narrowly elliptic, 6.0-9.5 by 1.5-2.0 cm, long acuminate, subentire, cuneate, green, glabrous, sericeous along the veins below, the secondary pairs of veins 4-5. *Inflorescence* reduced to solitary flowers in the leaf axils, the peduncle absent, the bracts and prophylls minute, lanceolate, 1 mm long, the sigmoid, thin pedicel 5-6 cm long, the receptacle 3 mm long, both red-maroon, sericeous; *calyx* lobes subequal, lanceolate, ca. 2 cm long, 0.5 cm wide, subentire, with 1-2 small teeth, yellow-green suffused with maroon, sericeous; *corolla* erect in the calyx, ca. 6.4 cm long, bright orange-red, sericeous, with a pronounced spur, the tube gradually expanding, the galea 2.0 by 1.3 cm, the lateral lobes triangular, 7 mm long, the ventral lobe recurved, elliptic, 1.3 cm long, the inside of the tube pubescent; *stamens* 4, the filaments ca. 5.5 cm long, reddish, puberulous, adnate to the base of the corolla tube for 7 mm,

the anthers exposed in the male phase of anthesis, syngenesous into a square, each anther 2.0 by 1.3 mm; ovary superior, turbinate, 5 mm long, maroon, sericeous, the style ca. 5.8 cm long at the female phase of anthesis, reddish, pilose, the stigma stomatomorphic-bilabiate; *nectary* a double connate, dorsal gland, 2.4 x 2.0 mm, white, glabrous. *Fruit* a globoid, white, sericeous berry, ca. 1.6 cm in diameter; *seed* oblong, 1.4 mm long, striate, reddish.

Columnnea glicensteinii Wiehler, *sp. nov.* TYPE: COSTA RICA. without specific locality: live plants collected by L. Glicenstein, no. 13, in 1978, GRF greenhouse accession no. W-2674, 4 June 1984, Wiehler 8401 (HOLOTYPE: GES; Isotypes: CR,K,NY,SEL,US, others to be distributed).

C. nicaraguensis Oersted affinis, sed caulibus squammulosis, foliis rubris, calicum lobis serratis, et corollarum tubis pilosis differt.

Epiphytic, perennial herb or subshrub with *stems* erect, ascending or descending, to 40 cm long, 7-10 mm in diameter, tan, sericeous, covered with little brown scales, the internodes 2-3 cm long; *leaf* pairs very unequal, the petiole ca. 3 mm long, yellow-green, sericeous, the lamina of the larger leaf of a pair elliptic or oblanceolate, 11-15 x 4-5 cm, acuminate, entire, oblique, dark green above, lighter green and blotched or suffused with wine-red below, puberulous, the secondary pairs of veins 4-6, the lamina of the smaller leaf similar, 3-5 by 1.5-2.0 cm. *Inflorescence* reduced to solitary flowers in the axils of the larger leaves, the peduncle absent, the bracts and prophylls 5-9 by 2-4 mm, green, the pedicels 1.0-1.4 cm long, yellow-green, sericeous, the receptacle ca. 5 mm long, yellow-green, villous, the *calyx* lobes subequal, lanceolate, ca. 1.6 cm long, serrate, light green, adaxially blotched with wine-red, sericeous; *corolla* ca. 7.5 cm long, the dorsal side and the lobes wine-red, with yellow veins, the ventral side and the spur lemon-yellow, the tube outside glandular pilose (long, capitate, glandular trichomes), inside puberulous with short capitate glandular trichomes; *stamens* 4, the filaments ca. 6 cm long, yellow, distally glandular pilose, the anthers at anthesis exerted, coherent into a rectangle, each anther 2.0 by 1.7 mm; *ovary* superior, ovoid, yellow-green, sericeous, the style ca. 7 cm long, cream-white, distally glandular pilose, the stigma bilobed; *nectary* a double connate, dorsal gland, 2.5 by 1.5 mm, white, glabrous. *Fruit* a globoid, white, pilose berry, ca. 1.5 cm in diameter; *seed* oblong, 1.8 mm long, striate, brown.

Dalbergaria evolvens Wiehler, *sp. nov.* TYPE: ECUADOR. Napo: km 71 on road from Baeza to Lago Agrio, epiphyte on moss covered tree trunks, and terrestrial in wet gravel on roadside cut, in flower, 4 May

1979, *Wiehler & Masterson 7904* (GES, QCA, NY, S); type material prepared from live cuttings of above collection, GRF greenhouse accession no. G-2757, 8 June 1984, *Wiehler 8403* (HOLOTYPE: GES; Isotypes: QCA, K, MO, NY, S, SEL, US).

Dalbergariae madisoniae Wiehler aemulans, differt nodiis brevioribus, corollarum tubis citrinis, sine callis, extus sericeis, intus trichomatibus glanduliferis.

Epiphytic, perennial, suffrutescent herb, the stems erect, ascending or spreading, sparsely branching, to 1.5 m tall, 0.7-1.2 cm in diameter, green, sericeous, the internodes 0.6-2.2 cm long; leaf pairs very unequal, the petiole 0.3-1.0 cm long, green, sericeous, the lamina of the larger leaf of a pair oblanceolate, 14-17 by 4.5-6.0 cm, acuminate, obscurely serrulate, oblique, the adaxial surface dark green and glabrescent, the abaxial surface with a red tip, lighter green or flushed with maroon, puberulous, with 7-8 pairs of secondary veins, the lamina of the smaller leaf similar, 2-3 by 0.5-0.8 cm. Inflorescence an axillary, reduced cyme of 1-2 flowers, the peduncle absent, the prophylls lanceolate, ca. 3 by 0.8 cm, entire, ciliate, greenish yellow or flushed or spotted with maroon, sericeous, the subtending bracts similar, linear, ca. 1 by 0.3 cm, the pedicels ca. 0.4 cm long, greenish yellow, sericeous, distally with prominent red calluses; calyx conical, the lobes subequal, lanceolate, ca. 2.2 by 0.3 cm, thickened and swollen at the base, subentire or obscurely serrulate, ciliate, greenish yellow, sometimes spotted with maroon, sericeous; corolla oblique in the calyx, tubular, ca. 5.3 cm long, spurred, sigmoid, lemon-yellow, sericeous, the lobes unequal, the upper 2 fused into a galea, 8 by 6 mm, the lateral lobes triangular, 6 mm long, the lower lobe recurved, ca. 10 by 5 mm, the ventral part of the throat marked with red, the inside of the galea, the lower lobe, and the inside of the tube furnished with capitate glandular trichomes; stamens 4, partially excluded in the male phase, the filaments ca. 4 cm long, yellow, glabrous, the anthers coherent into a rectangle, each anther 2 by 2 mm; ovary superior, turbinate, ca. 6 mm long, pale yellow, sericeous, the style ca. 4.5 cm long, pale yellow, with capitate glandular trichomes, the stigma bilabiate; nectary a double connate, dorsal, white, glabrous gland, 1.5 by 1.5 mm. Fruit a narrowly pointed berry, ca. 2.3 by 0.8 cm, yellow, sericeous, surrounded by enlarged calyx lobes, ca. 3.5 by 0.7 cm; seed fusiform, ca. 1.2 by 0.3 mm, striate, brown.

Dalbergaria filifera Wiehler, *sp. nov.* TYPE: ECUADOR. Esmeraldas: near new road from Lita and Alto Tambo towards San Lorenzo, about 20 km W of Alto Tambo. on the Chocó Escarpment, the first rise of the Andes from the hot lowland, ca. 1000 m altitude, extremely wet subcloud

forest, terrestrial in open, primary forest, 22 April 1990. *Wiehler & GRF Expedition 9033* (HOLOTYPE: GES; Isotypes: QCA,US).

Ex affinitate *Dalbergariae lanatae* (Seemann) Wiehler et *D. crassae* (Morton) Wiehler, ab utroque calycum forma et corollarum appendicibus distinctus.

Terrestrial (in extremely wet subcloud forest), perennial herb or subshrub, the stems ascending or spreading, to 1 m tall, 0.9-1.2 cm in diameter, maroon, sericeous, the internodes 1.5 to 8.0 cm long; leaf pairs very unequal, the petiole of the larger leaf 1.5 to 2.3 cm long, maroon, sericeous, the lamina of the larger leaf oblanceolate, 23-19 by 6-9 cm, acuminate, serrulate to subentire, oblique, upper leaf surface bluish green, glabrous, lower surface green, green with maroon spotting or flushing, or completely maroon, glabrous but sericeous along the veins, with 2 or 4 translucent red spots below the apex, along the midvein, with additional smaller translucent spots scattered irregularly, the secondary pairs of veins 8-10, the lamina of the smaller leaf similar, 2 by 1 cm, without translucent spots, often caducous. *Inflorescence* reduced to axillary cymes of 1-2 flowers, the peduncle absent, the small prophylls lanceolate, 9 by 2 mm, the pedicels ca. 0.4 cm long; *calyx* conical, greenish yellow, sericeous, the lobes subequal, narrowly lanceolate, pectinate, the filiform teeth 5 to 12 mm long, some of the teeth with secondary branching, greenish yellow, lanate; *corolla* erect in the calyx, tubular, ca. 3.3 cm long (not including the lobe filaments), lemon-yellow, lanate, constricted above the spur, inflated at midpoint, the nonspreading lobes equal, rounded, 5 by 4 mm, with a 1.8-2.3 long, 1 mm in diameter, bright orange, sericeous-hirsute filament extending from the outside of each lobe, the inside of the lobes and the inside of the tube glabrous; *stamens* 4, included, the filaments adnate to the base of the corolla tube for 1 mm, ca. 2.5 cm long, white, glabrous, the anthers syngenesous into a rectangle, each anther 4 by 2 mm; *ovary* turbinate, 4 cm long at anthesis, white, pubescent, the style ca. 2.5 cm long, white, pubescent, the stigma bilabiate; nectary reduced to a double connate, dorsal gland, 2 mm long, reddish, glabrous. *Fruit* not seen.

Dalbergaria mastersonii Wiehler, *sp. nov.* TYPE: ECUADOR. Pichincha: Cloud forest of Tandapi, near village of Cornejo Astorga (Tandapi), about 1.5 km from bridge over Río Pilatón, epiphyte in sunny area, 24 April 1979, *Wiehler & Masterson 7968* (HOLOTYPE: GES; Isotypes: QCA,NY,US,U,SEL, others to be distributed).

Ex affinitate *Dalbergariae asterolomae* Wiehler, a qua imprimis differt habitu compacto, foliorum laminis adaxialibus hirsutis, calicum lobis acutis serratisque, corollis brevioribus, et antherarum filamentis ovariorumque stylis glabris.

Epiphytic, perennial subshrub, the *stems* emerging from a common base, erect, ascending or spreading, sparsely or nonbranching, to 1 m tall, 0.8-1.9 cm in diameter, tan and woolly below, green and velutinous near the apex, the internodes 2-5 cm long; *leaf* pairs very unequal, the petiole subsessile, to 5 mm long, the lamina of the larger leaf of a pair oblanceolate, 20-31 by 5-11 cm, acute, serrulate, oblique, the adaxial surface dark green, hirsute, the abaxial surface sericeous, pale green, the apex for 3-7 cm solid dark red (Greyed Purple Group 183 A), often also with additional deep red blotches below the apex, and/or deep red margins and midveins, with 13-15 pairs of secondary veins; the lamina of the smaller leaf of a pair similar, but lanceolate, 3-6 by 0.7-1.4 cm. *Inflorescence* in the axil of the larger leaf of a pair, a reduced cyme of 2-4 flowers, the peduncle absent, the prominent prophylls ovate, serrate, ca. 4.0 by 2.5 cm, usually wine-red (Greyed Purple Group 183 D, but in other collections pale yellow-green), glabrescent above, hirsute below, the subtending bracts lanceolate, ca. 3.0 by 1.5 cm, yellow-green, blotched with wine-red, indumentum as above; pedicels ca. 0.4 cm long, yellow-green, blotched with wine-red, sericeous; *calyx* conical, the lobes subequal, lanceolate, ca. 2 cm long, serrate, yellow-green and blotched with wine-red or completely wine-red, with long, silky, white hairs; *corolla* slightly oblique in the calyx, tubular, ca. 4 cm long, spurred, inflated near midpoint, proximally white and glabrous, the upper 2/3 yellow-green (Yellow Green Group 154 B), covered with appressed, long, silky, white hairs, the lobes subequal, ovoid, each ca. 4 by 4 mm, entire, glabrous inside, but with capitate glandular trichomes at the base of each lobe, the tube inside glabrous; *stamens* 4, included in the male phase, the filaments ca. 3 cm long, white, glabrous, the anthers coherent into a rectangle, each anther ca. 2 by 2 mm; *ovary* superior, turbinate, ca. 6 cm long, yellow-green, sericeous, the style ca. 3 cm long, white, glabrous, the stigma bilabiate; *nectary* a double connate, dorsal, greyish white, glabrous gland, 2.1 by 2.1 mm. *Fruit* a pointed berry, ca. 1.7 by 1.1 cm, pink (Red Group 38 A), sericeous; *seed* fusiform, ca. 1.2 by 0.3 mm, striate, brown.

Dalbergaria medicinalis Wiehler, *sp. nov.* TYPE: ECUADOR. Pichincha: above Chiriboga, on old road from Quito to Santo Domingo, 2100 m altitude, on tree in cow pasture by creek, open, sunny area, prophylls plain green or maroon, corolla cream-white, lobes orange, 26 April 1988, *Wiehler & GRF Expedition 88215* (HOLOTYPE: GES; Isotypes: QCA,K,MO,NY,SEL,US).

Differt a *Dalbergaria picta* (Karsten) Wiehler foliorum apicibus non translucidis, corollarum forma recta et baccis albis.

Epiphytic, perennial, suffrutescent herb, the *stems* erect, ascending, or spreading, sparsely branching, to 1.2 m long, ca. 1.2 cm in diameter, tan below, green near apex, densely sericeous, the internodes 2.0-4.5 cm long; *leaf*

pairs very unequal, the petiole ca. 5 mm long, green, sericeous, the lamina of the larger leaf of a pair elliptic, acuminate, subentire to obscurely serrulate, ciliate, oblique, green and sericeous on both surfaces, but the abaxial side with maroon-red tips, additional spotting, or completely maroon-red, with ca. 12 pairs of secondary veins, the lamina of the smaller leaf of a pair similar, ca. 3 by 1 cm. *Inflorescence* an axillary, reduced cyme of 1-4 flowers, the common peduncle absent, the prophylls leafy, ovate, ca. 5.0 by 4.5 cm, subentire, sericeous, yellow-green, often spotted with maroon-red, or completely maroon-red, the margins sometimes edged with yellow, the subtending bracts lanceolate, 3.5 by 0.7 cm, similar to the prophylls, the pedicels ca. 1 cm long, yellow-green, sericeous, distally covered with red calluses; *calyx* conical, similar to pedicel, covered with red calluses, the lobes subequal, lanceolate, ca. 1 by 0.4 cm (2.5 by 1 cm in fruit), with a raised midvein, subentire, yellow-green, sericeous; *corolla* erect in the calyx, columnoid, 5.0-6.6 cm long, constricted below the spur, the tube white, cream-white or yellow, sericeous, the face of the limb orange (in other collections similar to tube, marked with maroon-red or rose), the galea 0.9 by 1.8 cm, the lateral lobes triangular, 1 cm long, the lower lobe lanceolate, 1.6 by 0.7 cm, the throat covered with glandular capitate trichomes, the inside of the tube glabrous; *stamens* 4, excluded in the male phase of anthesis, adnate to the base of the corolla tube, 4.5-5.5 cm long, white, pubescent, the anthers syngenesous into a rectangle, each anther 3 by 3 mm; *ovary* superior, turbinate, 5-7 mm long, sericeous, the style 4.5-5.5 cm long, distally pubescent, with glandular capitate trichomes, the stigma stomatomorphic; *nectary* a double connate, dorsal, glabrous gland, 3 by 5 mm. *Fruit* a pointed berry, 2.5 cm long, 1.4 cm wide, cream-white, sericeous; *seed* fusiform, 1 by 0.3 mm, striate, brown, with a funicle 4 mm long.

Dalbergaria ornata Wiehler, *sp. nov.* TYPE: COSTA RICA. San José: ca. 30 km SW of the city of San José, along Río Negro. Live plant material collected by *John Hall s.n.* in Jan. 1979, grown in GRF greenhouse under accession no. G-2665, type specimens prepared 8 May 1987, *Wiehler 87105* (HOLOTYPE: GES; Isotypes: CR,SEL, others to be distributed).

Habitu et corollae forma *Dalbergariae polyanthae* Wiehler similis, praesertim differt foliis maculatis, calycum lobis integribus, corollis aurantiacis baccisque albis.

Epiphytic, perennial, suffrutescent herb, the *stems* erect, ascending or spreading, branching, to 2 m long, 0.8-1.6 cm in diameter, green or tan, lanate, the internodes 1.5-6.0 cm long; *leaf* pairs very unequal, the petiole subsessile to 1 cm long, green, velutinous, the lamina of the larger leaf of a pair oblanceolate, 18-31 by 5-10 cm, acuminate, serrate, ciliate, oblique, adaxially bluish green,

hirsute, abaxially green, more frequently green with irregular red-maroon spotting, sometimes completely red-maroon, hirsute (trichomes maroon), with 8-10 pairs of secondary veins, the lamina of the smaller leaf of a pair similar, 3 by 1 cm, early caducous. *Inflorescence* an axillary, reduced cyme of 4-10 flowers, the peduncle absent, the prophylls ovate, 1 by 0.8 cm, the subtending bracts lanceolate, 1 by 0.3 cm, both red-maroon, velutinous, the pedicels ca. 2 cm long, yellow-green, velutinous, the long trichomes maroon; *calyx* conical, the lobes subequal, narrowly lanceolate, entire, ciliate, maroon with yellow-green borders, velutinous; *corolla* erect in the calyx, tubular, ca. 5 cm long, orange, pilose, spurred, the spreading lobes subequal, 5 by 5 mm, yellow, with red centers, the tube inside pubescent; *stamens* 4, excluded in the male phase of anthesis, the filaments 5.3 cm long, adnate to the base of the corolla tube for 1 mm, white, pubescent, the anthers syngenesous into a rectangle, each anther 1.8 by 1.2 mm; *ovary* superior, turbinate, 6 mm long, maroon, sericeous, the style ca. 4.8 cm long at the female stage of anthesis, white, glabrous, the stigma stomatomorphic; *nectary* a double connate, dorsal gland, 2 by 4 mm, and a single ventral gland, 2.0 by 1.2 mm, both glabrous. *Fruit* an elongated, ovoid, white, sericeous berry, 1.9 by 1.2 cm; *seed* oblong, 1.2 mm long, striate, reddish, with a fleshy funicle 2.6 mm long.

Dalbergaria tutunendana Wiehler, *sp. nov.* TYPE: COLOMBIA. Chocó: E of Tutunendo, on road Quibdo to Bolivar, Alto de Veinte, hacienda of Ruben Jaramillo, very moist rain forest on slope to river, ca. 480 m altitude, 15 March 1987, *Wiehler & GRF Expedition 8722* (HOLOTYPE: HUA; Isotypes: COL, GES, US).

Species nova *Dalbergariae schimpffii* (Mansfeld) Wiehler proxima. Differt foliis majoribus, coriaceis, glabrescentibus, apicibus viridibus, et floribus luteis.

Epiphytic, perennial herb or subshrub, the shoots emerging from a common base, sparsely branching, to 45 cm tall, 0.7-1.3 cm in diameter, grayish tan below, greenish tan towards the apex, sericeous, the internodes 2.0-3.5 cm long; *leaf* pairs very unequal, the petiole of the larger leaf of a pair ca. 2 cm long, ca. 6 mm in diameter, green, sericeous, the lamina oblanceolate, 22-27 by 8-11 cm, acute, entire to obscurely serrulate, ciliate, oblique, leathery, the adaxial surface dark green, glabrescent to glabrous, the abaxial surface lighter green, occasionally with 2 red spots below the apex, glabrescent, the veins sericeous, with 13 pairs of secondary veins, the petiole of the smaller leaf of a pair 1-2 cm long, the lamina lanceolate, ca. 2.5 by 0.5 cm. *Inflorescences* in the axils of the larger leaf of a pair, a reduced cyme of 2 to 4 flowers, the peduncle absent, the prophylls and subtending bracts small and nonshowy, lanceolate, 7-10 by 1.0-2.5 cm, yellow-green, with red hairs, the pedicels ca. 7 mm long,

yellow-green, covered with red hairs; *calyx* lobes equal sized, lanceolate, ca. 2.3 cm long, fused for ca. 4 mm, fimbriate, with ca. 10 teeth on each side of the lobe, yellow-green but appearing orange-red (Orange-Red Group 34A) because of the prominent velutinous indumentum, in fruit changing to wine-red (Red Group 46A), the long teeth covered with the same silky red hairs; *corolla* almost erect in the calyx, tubular, ca. 3.6 cm long, prominently spurred, inflated in the middle, the spur cream-white, the tube salmon-red (Red Group 40C), distally covered with long, velutinous, lemon-yellow indumentum, the small, spreading lobes subequal, rounded, each lobe ca. 2.5 by 2.5 mm, deep red (Red Group 45A), glabrous. the tube glabrous within; *stamens* 4, included in the male phase of anthesis, the filaments ca. 3.2 cm long, cream-white, glabrous, the anthers coherent into a rectangle, each anther 2 by 2 mm; *ovary* superior, turbinate, ca. 7 mm long, salmon red, with a few cream-white spots near the base, sericeous, the style ca. 2.5 cm long, white, glabrous, the stigma bilabiate, included in the female phase of anthesis; *nectary* a double connate, dorsal, glabrous, white gland, 2.5 by 2.0 mm. *Fruit* a pointed berry, ca. 2.4 by 1.0 cm, salmon red, blotched with cream-white near the base, sericeous; *seed* fusiform, ca. 1.2 by 0.3 mm, striate, brown.

Drymonia chiribogana Wiehler, *sp. nov.* TYPE: ECUADOR. Pichincha: old road from Quito to Santo Domingo, near Chiriboga, 1200 m altitude, epiphyte in forest, 26 April 1988, *Wiehler & GRF Expedition 88222* (HOLOTYPE: GES; Isotypes: QCA,K,NY,US).

Habitu plantae, foliis albo-nervatis, et calycibus foliosis *Drymoniae killipii* Wiehler similis, sed foliis glabrescentibus, corollarum forma coloreque, et styli glabris.

Epiphytic, perennial subshrub, the *stems* sparsely branching, erect, ascending or spreading, to 1.4 m long, to 2.2 cm in diameter, green, glabrescent, the internodes 2-5 cm long; *leaf* pairs subequal to unequal, the petioles 4-5 cm long, green, glabrescent, adaxially with 2 parallel maroon stripes, the lamina oblanceolate-elliptic, 17-14 by 8-10 cm, acuminate, subentire, oblique, leathery, green, glabrescent, the midvein, secondary, and tertiary veins marked whitish or silvery adaxially, the secondary pairs of veins 6-7. *Inflorescence* reduced to axillary, peduncular cymes of 2-4 or more flowers, the bracts small (prophylls lanceolate, 1.1 by 0.15 cm), the pedicels 2.2 to 3.0 cm long, light green or maroon, glabrescent; *calyx* conical, the lobes leafy, subequal, ovate, ca. 3.5 by 2.5 cm, acute, subentire, light green, often suffused with maroon or red, glabrescent; *corolla* oblique in the calyx, tubular-infundibular, ca. 4.3 cm long, constricted below the spur, white, the limb magenta, the lobes subequal, rounded, 1.3 by 1.3 cm, erose, the throat and the tube inside furnished with red lines, the nectar guide yellow, the tube outside and inside glabrous except

for trichomes dorsally in the throat; *stamens* 4, included, the filaments ca. 2.6 cm long, attached to the base of the corolla tube for 7 mm, white, glabrous, the anthers syngenesous, oblong, saggitate, each anther ca. 7 by 2 mm; *ovary* superior, obliquely cone shaped, 8 mm long, white, glabrous, the style ca. 2.4 cm long, white, glabrous, the stigma stomatomorphic; *nectary* a double connate, dorsal gland, 2 by 4 mm, grey, glabrous. *Fruit* a bivalved, laterally compressed, fleshy capsule, 2.6 by 2.3 cm, the split carpel walls externally greenish yellow, inside lemon yellow, the exposed cone of placentae, funiculi and seeds glistening grey; *seed* ovoid, 0.9 by 0.6 mm, dark brown.

Drymonia punctulata* Wiehler, *sp. nov. TYPE: ECUADOR. El Oro: road Buena Vista to Paccha, at km 32, 1100 m altitude, 16 April 1989, Williams, Dressler, & Whitten s.n. (GES); seed from this collection sown at GRF greenhouse, accession no. G-3548, type material prepared 31 Aug. 1992, *Wiehler 9206* (HOLOTYPE: GES; Isotypes: QCA,MO,NY,SEL,US).

A Drymonia chiribogana Wiehler calycum lobis lanceolatis parvioribus, corollarum forma, et limbis integribus albis recedit.

Epiphytic, perennial subshrub, the *stems* sparsely branching, erect, ascending or spreading, to 1.2 m tall, to 2.6 cm in diameter, green turning to tan, glabrous, the internodes 2-9 cm long; *leaf* pairs equal to subequal, the petioles 6-11 cm long, green, glabrous, adaxially with 2 parallel maroon stripes, the lamina ovate to elliptic, 14-21 by 8-12 cm, acuminate, entire, oblique, leathery, shiny, green, (abaxially flushed with maroon in strong sunlight), glabrous, the veins adaxially touched with a grayish white, the secondary pairs of veins 5-6. *Inflorescence* reduced to axillary cymes of 2-4 or more flowers, the peduncle congested, ca. 5 mm long, the prophylls and subtending bracts reduced, subulate, 5-11 mm long, green glabrous, the pedicels ca. 2.3 cm long, green, distally with a maroon flush, glabrous; *calyx* conical, the lobes subequal, lanceolate, ca. 2.5 by 1.1 cm, yellow-green, in strong sunlight flushed with maroon, glabrous, the upper or dorsal lobes with a maroon flush at the base; *corolla* oblique in the calyx, tubular-infundibular, sigmoid, ca. 4 cm long, white, glabrous, slightly constricted above the small spur, the limb white, the lobes subequal, rounded, each lobe ca. 8 by 8 mm, entire, the yellow throat and the white tube inside speckled with small maroon dots (in strong sunlight also the face of the limb); *stamens* 4, included, the filaments ca. 2.2 cm long, white, glabrous, attached to the base of the corolla tube for 6 mm, the anthers syngenesous, oblong, saggitate, each anther ca. 4.0 by 1.6 mm; *ovary* superior, obliquely cone shaped, 6 mm long, white, glabrous, the style ca. 1.5 cm long, white, glabrous, the stigma stomatomorphic; *nectary* a double connate, dorsal gland, 1.4 by 4.0 mm, maroon, glabrous. *Fruit* not seen.

Drymonia uninerva Wiehler, *sp. nov.* TYPE: COSTA RICA. without specific locality: collected by Dr. E.J. Alexander, s.n., in 1960, NY greenhouse accession no. 1670/60, Cornell and GRF accession no. G-796, 28 April 1973, *Wiehler 7327* (HOLOTYPE: GES; Isotypes: B, CR, F, G, GH, K, L, M, MO, NY, P, SEL, U, UC, US, W).

Differt a *D. stenophylla* (Donn. Smith) H.E. Moore petiolis brevioribus, foliis abaxialiter sine nervis secundariis prominentibus, calycum lobis latioribus, corollarum limbis albis, et stigmatibus albis.

Epiphytic, perennial, succulent herb; *stems* sparsely branching, erect or ascending, to 50 cm tall, to 1.5 cm in diameter, grey, glabrous, the internodes 3-5 cm long; *leaf* pairs equal, subequal, or unequal, the petiole 1-2 cm long, green, glabrous, adaxially with 2 parallel maroon stripes, the lamina elliptic, 12-17 by 4-5 cm, acuminate, entire, obtuse, leathery, dark green above, lighter green below, glabrous, the secondary pairs of veins 5-6, somewhat obscure in dried material. *Inflorescence* reduced to axillary, epedunculate cymes of 1-4 flowers, the bracts rudimentary, the pedicels ca. 5 mm long, light green, glabrescent; *calyx* lobes unequal, lanceolate, acuminate, entire, ciliate, light green, glabrescent, the lateral and ventral lobes 2 by 0.7 cm, the dorsal lobe 1.6 by 0.5 cm, the base inside surrounding the ovary and nectary wine-red; *corolla* ca. 4 cm long, cream-white, glabrous, the lobes unequal, arose, the laterals and dorsals ca. 7 by 7 mm, the ventral lobe 1 by 1 cm, the tube inside lemon-yellow, near the base wine-red, glabrous; *stamens* 4, included, the filaments ca. 1.6 cm long, white, suffused with wine-red, glabrous, the anthers coherent, oblong, saggitate, each anther 5 by 2 mm; *ovary* superior, obliquely cone shaped, 3 mm long, yellow, glabrescent, the style ca. 1.9 cm long, white, glabrous, the stigma stomatomorphic; *nectary* a double connate, dorsal gland, 3 by 2 mm, grey, glabrous. *Fruit* a bivalved capsule, fruiting calyx and external ovary wall pale yellow to white, ovary valves inside flushed with pink, the exposed cone of placentae, funiculi and seed mass yellow; dry *seed* ovoid, 1 by 0.5 mm, yellow, with a light brown hue. Chromosome no. $n = 9$ (Wiehler 1972).

Paradrymonia binata Wiehler, *sp. nov.* TYPE: ECUADOR. Esmeraldas: ca. 5 km W of Lita, dense, wet forest near Río Chuchubí, down the slope towards Río Mira, 800 m altitude, epiphyte 1.5 m high on small tree, entangled with dripping wet moss, rosette shaped, the stem near ground level disintegrated, mature leaves (with petioles) over 2 feet (67+ cm) long, 24 April 1990, *Wiehler & GRF Expedition 9071* (GES); type specimens prepared from live material of this collection grown in the

GRF greenhouse, accession no. G-3384, 20 Aug. 1992, *Wiehler 9205* (HOLOTYPE: GES; Isotypes: QCA,NY,US, others to be distributed).

Paradrymoniae hypocyrtae Wiehler primo aspectu maxime simili, sed calycibus laciniatis marroninis et corollis luteis.

Terrestrial and rosette forming herb, or hemi-epiphytic, or epiphytic vine, *stems* in rosette congested, 2-5 cm tall, ca. 1.7 cm in diameter, green, flushed with rose, glabrescent, the internodes ca. 0.7 cm, (stems of vines only seen in the wild, with longer internodes; *leaf* pairs subequal to extremely unequal, the petiole of the larger leaf of a pair 13-31 cm long, ca. 0.9 cm in diameter, adaxially winged, bright red, glabrescent, the lamina lanceolate, ca. 30-36 by 12-19 cm, acute, serrate, the base decurrent, bluish green above, lighter green, flushed with maroon below, glabrescent, sparsely puberulous along the veins, the lateral pairs of veins 14-17, the smaller leaf of a pair often rudimentary, needle shaped, to 2.5 cm long, without lamina, early caducous. *Inflorescence* axillary cymes of 4-10 or more flowers, the peduncle ca. 3 cm long, maroon, sericeous, the prophylls and subtending bracts needle shaped, to 1.3 cm long, maroon, sericeous, the pedicels ca. 2 cm long, maroon, sericeous; *calyx* lobes subequal, lanceolate, ca. 2 cm long, 0.5 cm wide, with ciliate teeth, each tooth ca. 4-10 mm long, maroon, pubescent-pilose; *corolla* oblique in the calyx, hypocyrtoid, with a prominent pouch, ca. 2.5 cm long, bright yellow, glabrous near the base, then pilose, ventrally saccate, the limb constricted to a narrow opening with equal, rounded lobes, each 3 by 3 mm; *stamens* 4, included, the filaments adnate to the base of the corolla tube, ca. 2 cm long, white, glabrous, the anthers syngenesous into a square, each anther 2 by 2 mm; *ovary* superior, turbinate, 3 mm long, maroon, sericeous, the style ca. 2.2 cm long, white, with capitate glandular trichomes, the stigma stomatomorphic bilobed; *nectary* a double connate, dorsal gland, 2 mm long. *Fruit* not seen.

***Paradrymonia fuquaiana* Wiehler, sp. nov.** TYPE: ECUADOR. Napo: N of Tena, road Hollin - Loreto: old road construction camp, at km 17 from Hollin, 1400 m altitude, on logs at roadcut, 6 Jan. 1990, *Determann et al. s.n.*, live plants brought to and grown at Atlanta Botanical Garden, cultivated at GRF greenhouse with accession no. G-3590, type material prepared 20 August 1992, *Wiehler 9204* (HOLOTYPE: GES; Isotypes: QCA,NY,US, others to be distributed).

Quoad florum formam, amplitudinem et fabricam internam ad *Paradrymoniam tylocalycem* Wiehler accedit, sed ab ea differt caulibus nodisque longioribus et foliis rigidis coriaceis.

Terrestrial, rosette forming herb, *stems* erect, somewhat succulent, 3-6 cm tall, ca. 1.7 cm in diameter, green, with a flush of maroon, glabrescent, the internodes 0.5 to 2 cm; *leaf* pairs subequal to strongly unequal, the petiole of the larger leaf of a pair ca. 4-8 cm long, ca. 0.9 cm in diameter, adaxially winged, succulent, green, with a flush of maroon, glabrescent, the lamina of the larger leaf elliptic, 27-35 by 7-10 cm, or larger, acute, serrulate, strongly decurrent at the base, dark green above, lighter green below, glabrescent, the lateral pairs of veins 12-14, the smaller leaf of a pair often rudimentary, needle shaped, without lamina, early caducous. *Inflorescence* axillary cymes of 4-10 flowers, the peduncle ca. 1-2 cm long, maroon, bracts small, linear, 1.8 by 0.15 cm, the pedicels ca. 0.6 cm long, maroon, weakly sericeous; *calyx* conical, maroon, with small green calluses, the lobes subequal, lanceolate, ca. 2.3 by 0.3 cm, entire but occasionally with 1-2 small teeth, maroon, sericeous; *corolla* oblique in the calyx, infundibular, ca. 6 cm long, with a spur 7 mm long, a long, narrow tube, 2.4 cm long, 0.4 cm in diameter, gradually widening, cream-white, hirsute, the limb inside white, dotted with royal purple, glabrous, the subequal, spreading lobes each ca. 1.2 by 1 cm, (lower lobe 1.4 by 1.3 cm), entire, the throat inside yellow-gold, hirsute, the venter of the tube with 2 longitudinal ridges (not grooves); *stamens* 4, included, the filaments ca. 3.5 cm long, adnate to the base of the corolla tube for 5 mm, white, glabrous, the anthers syngenesous into a square, each anther 1.2 by 1.2 mm, the thecae neither horned nor bearded, dehiscing by longitudinal slits; *ovary* turbinate, 5 mm long at anthesis, maroon, sericeous, the style ca. 2.8 cm long, white, pilose, interspersed with capitate glandular trichomes, the stigma stomatomorphic; *nectary* a double connate, dorsal gland, 2 by 2 mm, maroon, glabrous. *Fruit* not seen.

***Paradrymonia prististoma* Wiehler, sp. nov.** TYPE: ECUADOR. Napo: unfinished road from Tena to Latacunga, along Río Pano, 16-18 km from Tena, terrestrial and epiphytic, 23 April 1986, *Wiehler & GRF Expedition 86184* (HOLOTYPE: GES; Isotypes: QCA, others to be distributed).

Species habitu cum *P. ciliosa* (Martius) Wiehler optime congruens, sed differt corollae forma et corollae limbo ciliato non nisi in lobo ventrali.

Terrestrial, rosette forming herb and epiphytic climber, *stems* (after juvenile rosette stage) erect or creeping, somewhat succulent, the erect shoots 10 to 20 cm long (or longer), ca. 6-9 mm in diameter, green, sericeous, the internodes 1-3 cm long, with adventitious roots at nodes and internodes; *leaf* pairs subequal to strongly unequal, the petiole of the larger leaf of a pair ca. 4-7 cm long, ca. 8 mm in diameter, adaxially winged, succulent, green, sericeous, the lamina

of the larger leaf lanceolate or elliptic, 18-24 by 5-7 cm, acuminate, strongly decurrent at the base, the margins serrulate, dark green, sericeous (but appearing glabrescent) above, paler green or flushed with red, glabrous (but sericeous along the green veins) below. the lateral pairs of veins 11-13. *Inflorescence* axillary cymes of 4-10 flowers, epedunculate, bracts small, lanceolate-linear, ca. 15 by 2 mm, the pedicels ca. 0.5-1.0 cm long, green, sericeous; *calyx* conical, the lobes subequal, long lanceolate, ca. 20 by 2 mm, each lobe with a few obscure teeth, yellow-green, sericeous; *corolla* oblique in the calyx, infundibular, ca. 4.5-5.0 cm long, canary-yellow, (Yellow Group 13 B), glabrescent, the spur 5 mm long, the tube proximally narrow, ca. 4 mm in diameter, then bending downward and expanding to a diameter of 10 mm, dorsally and ventrally with 2 longitudinal furrows, the limb deeper yellow (Yellow-Orange Group 14 B), the 2 dorsal and 2 lateral lobes subequal, ca. 5 by 8 mm, entire, the lower lobe 8 by 10 mm, with prominent teeth curved upward, each tooth ca. 2.5 mm long, the inside of the tube deep yellow, glabrous; *stamens* 4, included, the filaments ca. 3 cm long, fused and adnate to the base of the corolla tube for 2.5 cm, cream-white, glabrous, the anthers syngenesous into a square, each anther 2 by 2 mm, the anther cells bearded; *ovary* turbinate, ca. 4.5 mm long at anthesis, red, covered with long red trichomes, the style ca. 3 cm long, white, pilose (trichomes red), stigma stomatomorphic-bilobed; *nectary* a large, double connate dorsal gland, 3.3 by 2.3 mm, white, glabrous. *Fruit* not seen.

***Pentadenia hypocyrtantha* Wiehler, sp. nov.** TYPE: BOLIVIA. Santa Cruz: Road Cochabamba to Santa Cruz, between Siberia and Comarapa, near Fortaleza, cloud forest, 2500 m altitude, 15 Jan. 1965, *S. Vogel 498* (HOLOTYPE: US; Isotypes: A,F,Z).

Differt a congeneris omnibus forma corollae saccata, *P. trolio* (Mansfeld) Wiehler excepto, quae folii elliptici papyraceique, calicibus lobi denticulati, et corollae dense pilosae habet.

Epiphytic, perennial suffrutescent herb or vine, *stems* ascending, spreading or descending, sparsely branching, 0.7-1.3 cm in diameter, green, tawny or maroon, pubescent to glabrescent, with internodes 1-4 cm long; *leaf* pairs unequal, the petiole 0.9-1.5 cm long, maroon, pubescent, the lamina of the larger leaf of a pair 6.0-8.5 by 3.5-5.5 cm, acute, entire, oblique or rounded, fleshy, green suffused with red, sparsely pubescent above, glabrescent below, with 5 pairs of reddish secondary veins, the lamina of the smaller leaf of a pair similar, ca. 5 by 3 cm. *Inflorescence* a reduced axillary cyme of 1-2 flowers, the pendent pedicels 2-7 cm long, maroon, glabrescent; *calyx* conical, maroon, sparsely pilose to pubescent, the lobes subequal, lanceolate, yellow-green flushed with maroon, the tips bright red, glabrescent, each lobe ca. 1 by 0.3 cm; *corolla* tubular, but with a prominent pouch as in the (now defunct)

genus *Hypocyrtia*, ca. 4 cm long, 2 cm wide, rose-red, glabrescent, the green throat constricted to a diameter of 0.5 cm, the small green lobes subequal, 1.4 by 1.5 mm, the tube inside glabrous; *stamens* 4, included, the white, pubescent filaments ca. 3 cm long, adnate to the base of the corolla tube for 6 mm, the anthers syngenesous, 1.2 by 1.2 mm; *ovary* superior, 5 mm long at anthesis, pubescent, the style ca. 3 cm long; nectary consisting of 5 maroon glands, the two posterior ones partially fused. *Fruit* not seen.

***Pentadenia katzensteinii* Wiehler, sp. nov.** TYPE: ECUADOR. Morona-Santiago: Cordillera del Boliche, about 60 km from Limón south to Gualaquiza, cloud forest, 1650 m altitude, 5 m up on trees within forest, 21 April 1988, *Wiehler & GRF Expedition 88128* (HOLOTYPE: GES; Isotypes: QCA, F, K, MO, NY, US).

Differt a *P. byrsina* Wiehler caulibus rectis, corollis purpureis, antheris inclusis et baccis lavendulaceis.

Epiphytic, perennial, suffrutescent herb with stiff, ascending, spreading and branching *stems*, to ca. 2 m long, 0.5-1.3 cm in diameter, brownish tan, apically maroon, sericeous, with internodes 1.0-3.8 cm long; *leaf* pairs very unequal, the petiole 2-4 mm long, tan, densely sericeous, the lamina of the larger leaf of a pair lanceolate, 5-7 by 1.5-3.0 cm, acuminate, entire, ciliate, strongly oblique, darker green above, lighter green below, glabrescent, sericeous along the maroon veins, with 4-6 pairs of secondary veins; the lamina of the smaller leaf of a pair similar, proximally caducous, distally ca. 1-2 by 0.5-1.0 cm. *Inflorescence* a reduced axillary cyme of 1-4 flowers, in the axils of the larger leaf of a pair, the peduncle absent, the prophylls subulate, 0.7-1.0 cm long, the pedicels 4-6 mm long, light green with a pink flush, sericeous; *calyx* conical, light green with a pink flush, sericeous, the lobes spreading, subequal, narrowly lanceolate to linear, 1.5 by 0.15 cm; *corolla* oblique in the calyx, tubular, slightly sigmoid, ca. 3 cm long, constricted above the cream colored, glabrous spur, the tube inflated above midpoint, lavender-purple, sericeous, the subequal lobes spreading, ca. 2 by 3 mm, deeper purple, edged with yellow, the tube inside glabrous; *stamens* 4, included, the white, pubescent filaments ca. 2 cm long, adnate to the base of the corolla tube for 4 mm, the anthers syngenesous, 1 by 1 mm; *ovary* superior, 3 mm long at anthesis, sericeous, the style ca. 2.5 cm long, white, glabrous, the stigma stomatomorphic; *nectary* consisting of 5 glands, with the 2 dorsal ones and the 3 ventral ones connate, the latter much larger. *Fruit* a globose pale lavender blue berry, ca. 1 cm in diameter; *seed* fusiform, striate, tan, 1.1 mm long, with a fleshy funicle 2.5 mm long.

Pentadenia manabiana Wiehler, *sp. nov.* TYPE: ECUADOR. Manabí: at km 67 on road from Chone to Santo Domingo, 500 m altitude. Epiphyte on old cacao tree. Live material collected by *C.H. Dodson*, 6791 on 31 July 1977, grown at the greenhouses of Selby Gardens and GRF under accession no. 2462. Type material from cultivated plants: 8 July 1987, *Wiehler 87102* (HOLOTYPE: GES; Isotypes: QCA,B,F,HBG,K,MO, NY,SEL,U,US, others to be distributed).

Ex affinitate *P. zapotalanae* Wiehler, a qua imprimis differt foliis sine apicibus rubris corolisque brevioribus non flexis, limbis majoribus patentibus.

Epiphytic, perennial herb or vine with erect, ascending, spreading or descending, branching *stems*, from 60 cm to 1 m long, ca. 0.8 cm in diameter, green or tawny, glabrescent, with internodes 2-4 cm long; *leaf* pairs very unequal, the petiole 0.7-1.9 cm long, green, glabrescent, the lamina of the larger leaf of a pair elliptic, 9-15 by 3-5 cm, acuminate, weakly serrulate, ciliate, strongly oblique, green and glabrescent on both surfaces, the abaxial surface sometimes flushed with red, or completely reddish, with 6-7 pairs of secondary veins; the lamina of the smaller leaf of a pair similar, ca. 4.5 by 2.0 cm. *Inflorescence* a reduced axillary cyme of 1-4 flowers (always in the axil of the larger leaf of a pair), the prophylls, pedicels and calyces light green, glabrescent to sparsely sericeous, ciliate, with the broadly lanceolate prophylls ca. 1.8 by 0.7 cm, the subtending bracts minute, lanceolate, 0.9 by 0.2 cm, the pedicel 0.5-0.7 cm long; *calyx* conical, the lobes unequal, lanceolate, entire, ciliate, sparsely pilose, 4 of the lobes almost equal, 1.5 by 0.2 cm, one of the two lower lobes larger, 1.8 by 0.5 cm; *corolla* erect in the calyx, tubular, light yellow, sparsely pilose, 2.2 cm long, constricted above the spur, the lobes 2 by 3 mm, the limb spreading, ca. 1 cm in diameter, the tube inside glabrous; *stamens* 4, included, the white, pubescent filaments 1.8 cm long, adnate to the base of the corolla for 5 mm, the anthers syngenesous, 1 by 1 mm; *ovary* superior, 2 mm long at anthesis, pubescent, the glabrous style 1.7 cm long, white, the stigma bifid; *nectary* consisting of 5 grey-white, separate glands. *Fruit* a globose, white, pilose berry, 1.2 cm in diameter; *seed* fusiform, striate, yellow, 1.1 mm long, with a fleshy funiculus 1.9 mm long.

Pentadenia rileyi Wiehler, *sp. nov.* TYPE: ECUADOR. Napo: 37 km from Baeza on road to Lago Agrio, epiphyte on trees in open meadow, 1500 m altitude, 24 April 1986, *Wiehler & GRF Expedition 86249* (HOLOTYPE: GES; Isotypes: QCA,F,K,MO,NY,SEL,U,US).

P. usernii (Cuatrecasas) Wiehler affinis, sed foliorum marginibus integris, floribus non solitariis, et calicum lobis sine laciniis notabilis.

Epiphytic, perennial herb. the *stems* ascending, spreading, rarely branching, 2-3 m long, defoliated except for the ca. 20 cm, 0.6-1.5 cm in diameter, brownish tan, sericeous-woolly (the prominent indumentum of stems, petioles, abaxial leaf laminae, prophylls, pedicels and calices appearing white), with internodes 1-5 cm long; *leaf* pairs equal or subequal, the petiole ca. 1.5 cm long, white woolly, the lamina lanceolate, 4-7 by 2.0-3.5 cm, acuminate, entire, ciliate, cuneate, darker green and sericeous above, lighter green and sericeous-woolly (white woolly along the veins) below, with 5-6 pairs of secondary veins. *Inflorescence* a reduced axillary cyme of 1-4 flowers, the peduncle absent, the prophylls lanceolate-subulate, 8 by 1 mm, white woolly, the pedicels ca. 1.2 cm long, white woolly; *calyx* conical, white woolly, the lobes equal, lanceolate, spreading, 8 by 3 mm, entire, the margins of the red apices recurved, causing the tips of the lobes to be concave; *corolla* erect in the calyx, tubular, ca. 2.3 cm long, slightly constricted above the cream-white, sericeous spur, the tube pale orange-pink, densely covered with 4 mm long red celled trichomes, inflated at midpoint, again constricted below the small (1.5 by 1.5 mm), barely spreading red marked lobes, the inside of the tube pubescent; *stamens* 4, included, the white, pubescent filaments ca. 1.6 mm long, adnate to the base of the corolla tube for 6 mm, the anthers syngenesous, 1 by 1 mm; *ovary* superior, 2 mm long at anthesis, glabrous, the style ca. 1.3 cm long, white, glabrous, the stigma stomatomorphic; *nectary* consisting of 5 glands, with the 2 dorsal ones connate. *Fruit* a globose, white, glabrous berry, ca. 9 mm in diameter; *seed* fusiform, striate, tan, 1 mm long, with a fleshy funicle 2.3 mm long.

Pentadenia rubriacuta Wiehler, *sp. nov.* TYPE: ECUADOR. El Oro: road Loja - Santa Rosa, ca. 20 km past Piñas, below cloud forest, 1000 m altitude, on slope of roadcut, 17 April 1986, *Wiehler & GRF Expedition 8648* (GES). Grown from live cuttings of this collection in GRF greenhouse, accession no. G-3200, type specimens prepared 8 July 1990, *Wiehler 90175* (HOLOTYPE: GES; Isotypes: QCA,B,F,HBG,K,MO, NY,SEL,U,US, others to be distributed).

A *P. zapotalana* Wiehler magnitudine coloreque corollarum, calicum lobis ellipticis et prophyllis ovatis recedit.

Epiphytic (occasionally terrestrial in disturbed areas) perennial herb, the *stems* erect, spreading or ascending, 0.6 to 1.2 m long, 0.7-1.0 cm in diameter, tawny, covered with small scales, sparsely pilose, with internodes ca. 2 cm long; *leaf* pairs very unequal, the petiole 0.9-1.2 cm long, green, pilose, the lamina of the larger leaf of a pair oblanceolate or elliptic, 10-12 by 4-6 cm, acute, weakly serrulate, ciliate, strongly oblique, green and sericeous on both surfaces, the abaxial tip red, with 5-7 pairs of secondary veins; the lamina of the smaller leaf of a pair similar, ca. 1.5 by 1.0 cm. *Inflorescence* a reduced

axillary cyme of 1-4 flowers, in the axil of the larger leaf of a pair, the peduncle absent, the prophylls ovate, ca. 1.3 by 0.8 cm, yellow-green, distally flushed with rose-pink, the subtending bracts similar, ca. 6 by 2 mm, the pedicels 3 mm long; *calyx* conical, cream-white, sericeous, the lobes unequal, elliptic, entire, ciliate, cream-white or yellow-green near the base, but mostly rose-pink, pilose-sericeous, the dorsal and the 2 lateral lobes smaller, 6-9 by 2-3 mm, the lower 2 lobes larger, 8-12 by 3-5 mm; *corolla* oblique in the calyx, tubular, 1.5-1.8 cm long, constricted above the cream colored and glabrous spur, bent above the constriction, red, pink, or orange-pink, pilose-sericeous, the lobes equal, not spreading, 1 by 1 mm, orange, the tube inside glabrous; *stamens* 4, included, the white, pubescent filaments ca. 1.7 cm long, adnate to the base of the corolla for 4-5 mm, the anthers syngenesous, 1 by 1 mm; *ovary* superior, 2-3 mm long at anthesis, green, pubescent, the style ca. 1.5 cm long, white, pubescent and with short capitate glandular hairs, the stigma bifid; *nectary* consisting of 5 white, glabrous glands, the dorsal 2 connate. *Fruit* a globose, white, pilose berry, ca. 1 cm in diameter; *seed* fusiform, striate, tan, 0.9 mm long, with a fleshy funiculus 1.6 mm long.

***Pentadenia tandapiana* Wiehler, sp. nov.** TYPE: ECUADOR. Pichincha: 7 km from San Miguel de los Bancos on road to Mindo, deforested, agricultural area, on tree in meadow along roadside, corollas yellow, 30 April 1990, *Wiehler & GRF Expedition 90133* (HOLOTYPE: GES; Isotypes: QCA,US).

A *P. ecuadorana* Wiehler calicum lobis integris et corollis parvioribus luteis statim dignoscenda.

Epiphytic, perennial herb, the *stems* ascending, spreading, branching, to 30 cm long, often defoliated near the base, 0.5-1.3 cm in diameter, brownish tan, scaly, glabrescent, with internodes 1.5-5.0 cm long; *leaf* pairs strongly unequal, the petiole ca. 7 mm long, green, sericeous, the lamina of the larger leaf of a pair elliptic or lanceolate, 6-9 by 2-3 cm, acuminate, entire, ciliate, oblique, green, sparsely sericeous on both surfaces, occasionally with abaxial red spots or with red margins (in sun grown specimens), with 4-6 pairs of secondary veins. *Inflorescence* a reduced axillary cyme of 1-8 flowers, the peduncle absent, the prophylls minute, subulate, 3 by 1 mm, often caducous, the pedicels 5-7 mm long, green sericeous; *calyx* conical, green, sericeous, the lobes subequal, lanceolate-linear, slightly spreading, 1.0 by 0.15 cm, entire, green; *corolla* erect in the calyx, tubular, 1.8-2.1 cm long, constricted above the cream-white, glabrous spur, the tube yellow, sericeous-pilose, the equal sized lobes, 2 by 2 mm, slightly spreading, the tube inside pubescent; *stamens* 4, included, the white, glabrous filaments ca. 1.9 cm long, adnate to the base of the corolla tube for 4 mm, the anthers syngenesous, 1 by 1 mm; *ovary* superior,

3 mm long at anthesis, glabrous, the style ca. 1.7 cm long, white, glabrous, apically bent like a shepherd's crook, the stigma bilobed; *nectary* consisting of 5 glands, the dorsal 2 connate. *Fruit* a globose, glabrous berry, ca. 7 mm in diameter; *seed* fusiform, striate, tan, 0.9 mm long, with a fleshy funicle 1.8 mm long.

***Rhoogeton panamensis* Wiehler, sp. nov.** TYPE: PANAMA. Coclé: El Valle de Antón: La Mesa, 19 June 1978, *Dressler s.n.*, live material cultivated at SEL and GRF greenhouses, accession no. G-2633, type material prepared 8 July 1985. *Wiehler 8536* (HOLOTYPE: GES; Isotypes: PMA,K,MO,NY,SEL,US).

Differt a *Rhoogeto viviparo* Leeuwenberg foliis longioribus lanceolatis decurrentibus et corollis albis.

Terrestrial, perennial, tuberous, acaulescent herb, to 35 cm tall, the underground tuber ca. 2.5 cm in diameter (or larger), the *leaves* erect or spreading, longer than the inflorescences, with 9-14 blades per plant; petioles ca. 6 cm long, reddish maroon, glabrescent, the lamina lanceolate-elliptic, ca. 25 by 6 cm, acuminate (occasionally acute), double serrate, long decurrent, green, glabrous to glabrescent, the midvein abaxially as maroon as the petiole, the secondary pairs of veins 8-11. *Inflorescences* pseudo-umbellate, compound, pair flowered cymes arising on long peduncles from the leaf axils, each umbel with 10-20 flowers, the peduncle ca. 18 cm long, reddish maroon, glabrescent, the prophylls and subtending bracts lanceolate-elliptic, 1.6-2.1 by 0.3-0.4 cm, entire, green, sparsely sericeous, the pedicels ca. 1 cm long, green, glabrescent; *calyx* lobes equal sized, lanceolate, ca. 1.2 by 0.4 cm, with a few teeth near the apex, green, sericeous; *corolla* oblique in the calyx, tubular-infundibular, ca. 2.5-3.5 cm long, with a small spur and a flaring limb, white (pale pink in strong sunlight), sparsely sericeous-pilose, the upper 4 lobes of the limb subequal, ca. 7 by 7 mm, the lower lobe ca. 9 by 9 mm, the margins wavy, entire, the face of the limb with a pink flush, the tube inside with rose longitudinal lines and a ventral yellow nectar guide; *stamens* 4, included, ca. 1.4 cm long, white, glabrous, adnate to the base of the corolla tube for 4 mm, the anthers coherent into a square, each anther 0.8 by 0.8 mm, the thecae dehiscent by longitudinal slits; *ovary* superior, turbinate, 3 mm long, sericeous, the style ca. 1.2 cm long, white, with capitate glandular trichomes, the stigma stomatomorphic; *nectary* a double connate, dorsal gland, 1.0 by 1.4 mm, maroon. *Fruit* a bivalved capsule; *seed* not seen.

***Smithiantha canarina* Wiehler, sp. nov.** TYPE: MEXICO. Oaxaca: Area of Temascal, near dam overflow of Presa Miguel Alemán, on rock outcroppings in forest above road; whitish rhizomes of dormant plants and

dried up stalks with seed pods in small crevices filled with humus, 24 April 1991, *Wiehler, Lau, & GRF Expedition 9105* (GES). Grown from same rhizomes in GRF greenhouse, accession no. G-3584, first flowers 24 Nov. 1991; specimens prepared 6 Dec. 1991, *Wiehler 91240* (HOLOTYPE: GES; Isotypes: BH,K,MEXU,NY,SEL,US, others to be distributed).

A. S. multiflora (Martens & Galeotti) Fritsch corollis canarinis, tubis angustioribus longioribusque, ventraliter sine sulcis prominentibus, et lobis parvioribus bene distincta.

Terrestrial herb with underground rhizomes consisting of compacted, thick, succulent leaf scales, each rhizome ca. 2.3 by 1.0 cm, cream-white, glabrous; *stems* erect or ascending, rarely branching, 50-60 cm tall, ca. 9 mm in diameter, pale green, with elongated whitish lenticels, puberulous, the internodes 4-5 cm long; *leaves* opposite decussate, of equal size, the petioles 4-5 cm long, ca. 5 mm in diameter, pale green, puberulous, the lamina cordate, ca. 5 by 5 cm, acute, crenate, leathery stiff, adaxially dark green, hirsute, abaxially lighter green suffused with maroon, puberulous, the secondary pairs of veins 4. *Inflorescence* an apical raceme of 20+ flowers in an alternate arrangement (=typically for the genus), ca. 36 cm long, all green parts puberulous, with scattered capitate glandular trichomes, the bracts lanceolate, green, the pedicels ca. 1 cm long, green, the hypanthium at anthesis 4 mm long, dark green, the *calyx* lobes equal, lanceolate, 5 by 3 mm, medium green; *corolla* almost erect in the calyx, tubular-infundibular, the tube nodding, gradually widening, distally bent upwards, dorsally with 2 prominent longitudinal grooves, ca. 3.5 cm long, proximally 0.7 cm, distally 1.1 cm in diameter, canary yellow (R.H.S. Colour Chart: Yellow Group 9 C), puberulous, with scattered capitate glandular trichomes, the limb ca. 1.5 cm in diameter, deeper canary yellow (Yellow Group 9 A), with short capitate glandular trichomes, the lobes equal, rounded, ca. 6 by 6 mm, the tube inside yellow, ventrally with 3 faint orange nectar guides, the throat covered with short capitate glandular trichomes; *stamens* 4, included, adnate to the base of the corolla tube for 2 mm, ca. 2.6 cm long, white, pilose, the anthers coherent into a square, each anther 1.0 by 0.9 mm, the thecae parallel, dehiscing by longitudinal slits; *ovary* semi-inferior, turbinate, ca. 7 mm long, pale green, pubescent, the style ca. 2.3 cm long, white, pubescent-pilose, the stigma stomatomorphic; *nectary* a ring, ca. 1.5 mm high, with thickenings in the 2 lateral and the dorsal areas, grayish white, glabrous. *Fruit* a dry, bivalved capsule, ca. 1.4 cm long, splitting loculicidally; *seed* fusiform, ca. 0.6 by 0.3 mm, striate, light brown.

Smithiantha laui Wiehler, *sp. nov.* TYPE: MEXICO. Oaxaca: About halfway between Valle Nacional and Oaxaca on road no. 75. On almost

vertical rocks of roadside cut, dripping with water. Whitish rhizomes, dried up plant stalks, and a few small plants in flower. Area wet, at the beginning of the rainy season. Plants fully sun exposed or in partial shade, altitude 1100 m; 25 April 1991, *Wiehier, Lau, & GRF Expedition 9117* (GES). Grown from the above cited rhizomes in GRF greenhouse, accession no. G-3588, first flowers 29 November 1991; specimens prepared 6 December 1991, *Wiehier 91241* (HOLOTYPE: GES; Isotypes: BH,K,MEXU,NY,SEL,US, others to be distributed.)

Inter species generis corollarum forma et colore purpurea differt.

Terrestrial herb with underground scaly rhizomes, ca. 2.5 by 1.0 cm, cream-white, glabrous; *stems* erect or ascending, rarely branching, 30-50 cm tall, 0.5-1.4 cm in diameter, succulent, pale green or deep maroon with elongated green lenticels, densely hirsute, the multicellular, uniseriate trichomes clear celled or filled with anthocyanin, the internodes 2-4 cm long; *leaves* opposite decussate, of equal size or unequal, the petioles 2.5-5.5 cm long, near the base 0.8 cm in diameter, succulent, of the same color and indumentum as the stems, the lamina broadly cordate, 9-12 by 9-12 cm, acute, crenate, adaxially dark green or maroon, hirsute, abaxially lighter green or lighter maroon, hirsute, the secondary pairs of veins 4-6. *Inflorescence* an apical raceme of 18+ flowers in an alternate arrangement, to 40 cm long, green or maroon, hirsute, mixed with capitate glandular trichomes, bracts 0.4 cm long, lanceolate, pedicels 2.0-3.5 cm long, green or maroon, hypanthium at anthesis conical, 4 mm long, *calyx* lobes broadly lanceolate, spreading, almost equal in size, 3.0 by 1.5 mm, green or maroon, hirsute, with capitate glandular trichomes; *corolla* nearly erect in the calyx, infundibular, 4 cm long, the tube ca. 1.3 cm in diameter at midpoint, lavender-purple (Purple Group 77 C), sparsely hirsute, with capitate glandular trichomes, the limb ca. 2.3 cm in diameter, the lobes rounded, of almost equal size, each 7 by 8 mm, entire, lavender-purple, with deeper purple spots outlined in white, pubescent, the throat and tube inside ventrally with three golden yellow nectar guide lines and spotted with purple; stamens 4, included, adnate to the base of the corolla tube for 2 mm, ca. 2.8 cm long, white, pubescent, the anthers coherent into a square, each anther 1 by 1.8 mm, the thecae parallel, dehiscing by longitudinal slits; *ovary* semi-inferior, turbinate, ca. 4 mm long, green, pubescent, the style ca. 1.6 cm long, white, sparsely pilose, the stigma stomatomorphic; *nectary* ring shaped, ca. 1.5 mm tall, enlarged in the 2 lateral and in the dorsal areas, white, glabrous. *Fruit* a dry, bivalved, pointed capsule, ca. 1.6 cm long, splitting loculicidally; *seed* fusiform, 0.5 by 0.2 mm, striate, reddish brown.